

C. E. Smith & Co

Townsville, North Queensland, Australia

19,2°S, 146,5°E

sunny

office-building

office building in tropical climate,
sunshades, planter boxes

building

The C.E. Smith & Co building is a contemporary office building. On the street level it includes an arcade. An open car-park on the second floor detaches the offices in the upper stories from the arcade. The office floors have an undivided central working area, cellular offices on the South-facade and service rooms on the North-facade.

daylight strategy

In the tropical location of Townsville at 19 degrees south latitude on the Northeast coast of Australia, daylight illumination exceeds 15 000 lux for 90% of time between 9:00 AM and 5:00 PM. Sunshine can be expected for over 8 hours each day. Sky conditions tend to be cloudy, 6,5 octals, or overcast during the monsoonal rainy season from January through to March with the remainder of the year having skies with less than 4 octals cloud cover. Glare in the case of external office walls in the C.E. Smith building was controlled using gray glass, deep sunscreens with external planter boxes and solid panels below a 1000 mm high sill. The window system allows ground-reflected light to reach office ceilings without causing glare for seated office workers.

office

The cellular offices are visually linked to the central working zone by glazed partition walls. The sliding office windows are of tinted glass and allow the user to control natural ventilation as well as the amount of ground-reflected light entering the space.



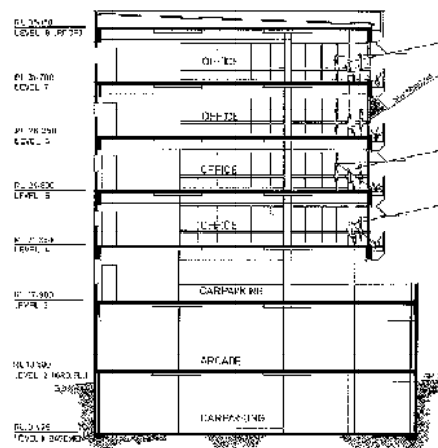
Aerial photograph showing the location of the C. E. Smith & Co Building in the city of Townsville.



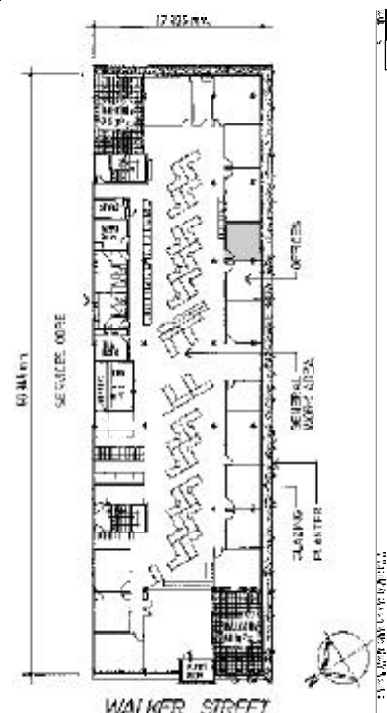
Fisheye picture showing the considerable obstruction by fixed shading systems



Photograph showing planter boxes and sun shading awnings.

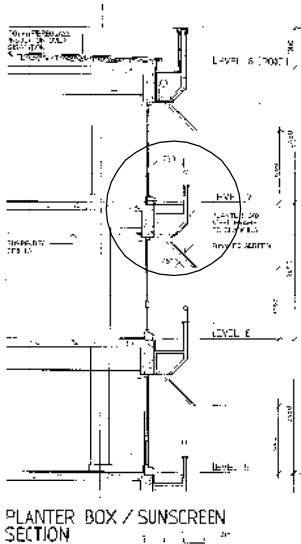


Cross-section and floorplan

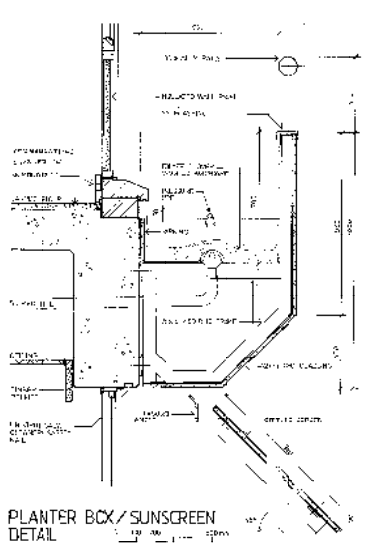




Fisheye view of the selected office. Glazed partitions link the peripheral offices to the central zone. Artificial lights are switched on.

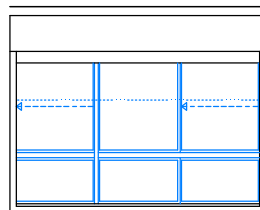


PLANTER BOX / SUNSHADE
SECTION

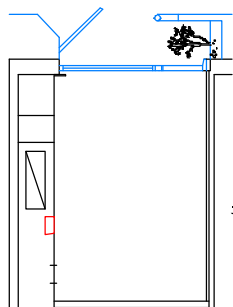


PLANTER BOX / SUNSHADE
DETAIL

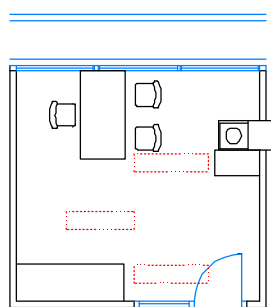
Section through the facade of the building. Simple fixed architectural elements adapt the skin of the building to the tropical climate. They cut off direct sunlight and smooth the reflected light from the ground.



window wall



cross-section



plan

building data

size	7 000 m ² incl. car park
number of stories	7
architect	Macks & Robinson Pty Ltd Architects
daylight consultant	Macks & Robinson Pty Ltd Architects
year of completion	1987

office room

daylight strategy	unilateral, sidelighting
dimensions (depth/width/height)	4,0 m / 3,6 m / 2,6 m
room area	14,4 m ²
floor	blue-grey carpet, 8%
wall	off white paint, 85%
door	paint mid beige, 45%
ceiling	shadowblock plaster, off white, 85%
desk	polished timber, 30%
SW facing window	gray tint glass, single glazed 6 mm
lamp types	fluorescent lamps
installed power density	16,2 W/m ²
control strategy	switching, manual, by rows

facade	SW facade		rear wall
	SW facade	rear wall	
data	orientation	210°	30°
	glazing surface	6,0 m ²	2,4 m ²
	opening index	0,57	0,23
	daylighting	●	●
	view outside	●	—
function	ventilation	●	—
	operable	●	—
	shading	●	—
	redirection	●	—
function systems	planter box		none
	planter box	sunshade	
function	sun shading	●	—
	glare protection	●	—
	redirection	—	—
location	inside	—	—
	window pane	—	—
	outside	●	—
	moveable	—	—
	fixed	●	—